

Fire Retardancy: An Ever Increasing Need to Scout for Right Material for Fire Prevention By Mr. Ranjeet Sharma, President & CEO, 3A Composites India Pvt. Ltd.

Mumbai, Nov 2023

In an era where fire safety is no longer optional but essential, ALUCOBOND® stands at the forefront of responsible architectural solutions. As cities expand vertically and design demands grow more complex, choosing the right cladding material becomes critical. ALUCOBOND®, with its proven fire-retardant performance and global legacy, empowers architects and developers to create safer, smarter and more resilient buildings-without compromising on aesthetics.

The incidence of fire breakouts continues to rise at an alarming rate. For instance, in a city like Mumbai, the recent fire incidents show that high-rise buildings are vulnerable to fire risks. According to BMC data, from 2008 to 2020, about 57,540 fire incidents occurred, out of them, from 2008 to 2018, the total number of fires in high-rise buildings was 1,518. Similar is a story for other cities or towns, as well.

This ever-increasing concern calls for minimising fire risks, particularly in high-rise residential or commercial buildings, airports, railway stations or mass transit terminals, major sporting arenas, hospitals, schools and other establishments. Globally, architects and developers are required to meet stringent regulations to design and build the structures and surrounding environments protective of fire hazards.

If we closely analyse the causes of fire, the usage of 'material' has always remained at the centre among various other reasons for fire incidents. According to the National Institute of Disaster Management (NIDM) Report on 'Fire in India: Learning Lessons for Urban Safety', Highly flammable material has been the cause of major fire incidents across India and most of the fire outbreaks were worsened by the excessive use of such materials.

(https://nidm.gov.in/PDF/pubs/Fires_in_India_2020.pdf)



Fire Prevention Begins with the Right Materials

The best approach to prevent fires is to substitute or minimise the use of flammable material, feel the experts. It then becomes imperative for developers or property owners to choose the right grade of building materials, which can minimize the damage to human lives and the structures in case of fire.

While choosing the right material, nowadays, the concept of 'fire retardancy' and the use of 'fire retardant material' plays a vital role. A fire retardant is a substance that is used to slow down or stop the spread of fire or reduce its intensity. This is commonly accomplished by chemical reactions that reduce the flammability of fuels or delay their combustion. Fire retardants may also cool the fuel through physical action or endothermic chemical reactions, thus reducing or eliminating the risk of serious damage to human life, which is of paramount importance.

To ensure the same, using certified fire-retardant construction material is the need of the hour. There are many ways in which a fire retardant material can put out a fire, which will depend on the type of retardant used. On this scale, the right grade of Fire Retardant (FR) Aluminium Composite Material (ACM) proves to be the best alternative to mitigate the risk caused by fire. The FR ACM uses 'Fire Retardant Core Material' with adequate thickness of the external aluminium sheets. Such FR ACM helps in minimising fire casualties and has a fire-resistance rating of sufficient time that allows enough time for the evacuation of people and property. This material emits negligible or virtually no toxic gases and it does not produce flaming droplets, both of which can be deleterious to building occupants.

Therefore, the key is to choose the right testing standard method for the evaluation of fire propagation characteristics of exterior wall assemblies containing fire-retardant material such as NFPA 285. This test has to be backed by a product test such as EN 13501-1 to ensure the product in isolation of the system can also withstand fire as per the standards.

A 'true' Fire Retardant ACM should ideally have a non-combustible mineral core of not less than 70% and appropriate certifications from a credible third-party authority. More than ever, buildings of the future not only have to comply with the highest demands on design, but they also have to meet the latest technical requirements such as sustainability, energy efficiency and most importantly - fire protection.

Fire Safety Risks and Industry-Leading Solutions

In regular ACMs, fire spreads upwards due to combustible cladding, thereby contributing to the full-scale mishap. Furthermore, fire breaks in and out through glass, causing flames to build up and smoke to break out. On the other hand, a standardised fire-retardant or non-combustible cladding material and system restricts fire spread and prevents droplets from falling, thereby avoiding further spread and harm to people and property. It also restricts smoke and toxic

fumes, which are a major cause of death in the event of a fire.

Branded ACP materials such as ALUCOBOND® have set new standards for cladding materials with certified and proven fire retardancy characteristics. The variant, ALUCOBOND® PLUS which is fire retardant has a minimum 70% non-combustible mineral-filled core while ALUCOBOND® A2 has a 90% non-combustible mineral filled core. Such high-performance materials are recommended in countries with the most stringent fire regulations and have been time-tested since their inception for more than 40 years. Even the new colour range of ALUCOBOND® Colourscapes, Concrete, Anodized Look, Organics Elegance and Grove are available in these fire retardant variants. Moreover, these also come with standard benefits and product properties of ALUCOBOND® such as flatness, formability, resistance to weather and easy processing delivering brand promise. Such Fire Retardant materials prove to be the saviour in chronic fire situations to safeguard valuable assets and lives, thus justifying their raison d'être in the building material space.